

REMARKS

Applicants will address each of the Examiner's objections and rejections in the order in which they appear in the Office Action.

Claim Rejections – 35 USC §112

In the Office Action, the Examiner rejects Claims 8, 9, 11-12, 17 and 18 under 35 USC §112, second paragraph, as being indefinite. In particular, the Examiner objects to the phrase "said transferring chamber" as there are two transfer chambers claimed.

Applicants have amended each of these claims to recite "one of said transferring chambers". Applicants believe that this should overcome the Examiner's objection, and it is respectfully requested that the rejection be withdrawn.

Claim Rejections – 35 USC §103

Rejection of Claims 1 and 13

The Examiner also rejects Claims 1 and 13 under 35 USC §103 as being unpatentable over Hiraga et al. in view of Harrah et al. This rejection is respectfully traversed.

Hiraga discloses a film deposition apparatus comprising: a stock chamber (vacuum vessel (1)); a transferring vessel (200); and gate (air tight doors (11)). Hiraga states ". . . it is necessary to use the clean, sealed vessel such as in the thin-film fabrication method of this invention in order to completely remove contaminant gases" (col. 13, lns. 49-52).

In contrast, Claim 1 of the present application comprises “a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table” as Applicants recognized the problem that “the degradation may be contained to a degree that raises no significant problem by reducing the oxygen concentration in the inert gas to 1 ppm or less. However, this is still insufficient to ensure a long term reliability”, as described in the specification (see e.g. p. 2, ln. 24- p. 3, ln. 1) even if such a sealed vessel is used.

Hiraga has no recognition of this problem. Therefore, it is respectfully submitted that there is no suggestion or motivation to employ the alleged teaching of oxidizable metal of Harrah to modify the apparatus of Hiraga.

Accordingly, it is respectfully submitted that the rejected claims are patentable over these cited references, and it is requested that the rejection be withdrawn.

Rejection of Claims 2 and 12

The Examiner also rejects Claims 2 and 14 under 35 USC §103 as being unpatentable over Hiraga et al. and Harrah et al. and further in view of Begin et al. This rejection is also respectfully traversed.

For at least the reasons discussed above for the independent claims, dependent Claims 2 and 14 are also patentable over the cited references.

Further, Applicants note Begin that discloses that in the fabrication of wafers, some process steps are performed which generally do not require a vacuum individual to any angle chamber and that individual chambers may be exposed to the atmosphere. However, as

explained above, Hiraga states that it is necessary to use a clean, sealed vessel in a thin-film fabrication method in order to completely remove contaminant gases. Therefore, Applicants respectfully submit that it would not have been obvious to a person of ordinary skill in the art at the time of the invention to modifying the apparatus of Hiraga, Harrah and Begin to arrive at the claimed invention.

Accordingly, it is respectfully submitted that the rejected claims are patentable over these cited references, and it is requested that the rejection be withdrawn.

Rejection of Claims 3 and 15

The Examiner also rejects Claims 3 and 15 under 35 USC §103 as being unpatentable over Hiraga et al. and Harrah et al. and further in view of Kakei et al. This rejection is also respectfully traversed.

For at least the reasons discussed above for the independent claims, dependant claims 3 and 15 are also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claim 4

The Examiner also rejects Claim 4 under 35 USC §103 as being unpatentable over Hiraga et al. in view of Harrah et al. in view of Conte.

For substantially the same reasons discussed above, independent claim 4 is also patentable over the cited references, and it is request that this rejection be withdrawn.

Furthermore, although Conte discloses a getter pump, claim 4 requires “wherein said liquid phase film deposition chamber is provided with, via a piping, a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table.” This has a remarkable effect in that “a heat source does not need to be placed near the film deposition apparatus.” See e.g. p.14 lns.16-17 of the present application. Therefore, it is respectfully submitted that it would not have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Hiraga, Harrah and Conte to arrive at the present application.

Accordingly, it is respectfully submitted that the rejected claims are patentable over these cited references, and it is requested that the rejection be withdrawn.

Rejection of Claim 5

The Examiner also rejects Claim 5 under 35 USC §103 as being unpatentable over Hiraga et al., Harrah et al. and Conte and further in view of Begin et al. This rejection is also respectfully traversed.

For at least the reasons discussed above for the independent claims, dependant claim 5 is also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claim 6

The Examiner also rejects Claim 6 under 35 USC §103 as being unpatentable over Hiraga et al., Harrah et al. and Conte and further in view of Kakei et al. This rejection is also respectfully traversed.

For substantially the same reasons discussed above, independent claim 6 is also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claims 7, 8, 16 and 17

The Examiner also rejects Claims 7-8 and 16-17 under 35 USC §103 as being unpatentable over Hiraga et al. in view of Harrah et al. and in view of Begin et al. This rejection is also respectfully traversed.

For substantially the same reasons discussed above, independent claims 7, 16 and dependent claims 8, 17 are also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claims 9 and 18

The Examiner also rejects Claims 9 and 18 under 35 USC §103 as being unpatentable Hiraga et al., Harrah et al. and Begin et al. and further in view of Kakei et al. This rejection is also respectfully traversed.

For at least the reasons discussed above for the independent claims, dependant claims 9 and 18 are also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claims 10 and 11

The Examiner also rejects Claims 10 and 11 under 35 §USC 103 as being unpatentable over Hiraga et al. in view of Harrah et al., in view of Begin et al. in view of Conte. This rejection is also respectfully traversed.

For substantially the same reasons discussed above, independent claim 10 and dependent claim 11 are also patentable over the cited references, and it is requested that this rejection be withdrawn.

Rejection of Claim 12

The Examiner also rejects Claim 12 under 35 USC §103 as being unpatentable over Hiraga et al., Harrah et al., Begin et al. and Conte and further in view of Kakei et al. This rejection is also respectfully traversed.

For at least the reasons discussed above for the independent claims, dependent claim 12 is also patentable over the cited references, and it is requested that this rejection be withdrawn.

Therefore, it is respectfully submitted the claims of the present application are patentable over the cited references, and each of the §103 rejections should be withdrawn.

Information Disclosure Statement

Applicants are submitting an Information Disclosure Statement herewith and request consideration of it at this time by the Examiner.

Conclusion


Accordingly, it is respectfully submitted that the present application is now in a condition for allowance and should be allowed.

If any further fee is due for this amendment, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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Marked-up copy of the claims as amended:

IN THE CLAIMS:

Please amend the claims as follows:

1. (Previously Amended) A film deposition apparatus comprising:

a stock chamber for loading or unloading a substrata;

a transferring chamber including a mechanism for transferring said substrate; and

a liquid phase film deposition chamber connected to said transferring chamber through a gate,

wherein said liquid phase film deposition chamber is provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table.

2. (Not Amended) A film deposition apparatus according to claim 1, wherein an inside of said transferring chamber is kept under a reduced pressure and said liquid phase film deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

3. (Not Amended) A film deposition apparatus according to claim 1, wherein said transferring chamber is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

4. (Not Amended) A film deposition apparatus comprising:

a stock chamber for loading or unloading a substrate;

a transferring chamber including a mechanism for transferring the substrate; and

a liquid phase film deposition chamber connected to said transferring chamber through a gate,

wherein said liquid phase film deposition chamber is provided with, via a piping, a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table.

5. (Not Amended) A film deposition apparatus according to claim 4, wherein an inside of said transferring chamber is kept under a reduced pressure and said liquid phase film deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

6. (Not Amended) A film deposition apparatus according to claim 4, wherein said transferring chamber is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

7. (Not Amended) A film deposition apparatus comprising:
a stock chamber for loading or unloading a substrate;
two transferring chambers each connected to said stock chamber through a gate;
a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate; and

a liquid phase film deposition chamber connected to another said transferring chamber through a gate,

wherein said liquid phase film deposition chamber is provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table.

8. (Currently Amended) A film deposition apparatus according to claim 7, wherein an inside of one of said transferring chambers is kept under a reduced pressure and said liquid phase film deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

9. (Currently Amended) A film deposition apparatus according to claim 7, wherein one of said transferring chambers is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

10 (Not Amended). A film deposition apparatus comprising:
a stock chamber for loading or unloading a substrate;
two transferring chambers each connected to said stock chamber through a gate;
a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate; and
a liquid phase film deposition chamber connected to another said transferring chamber through a gate,
wherein said liquid phase film deposition chamber is provided with, via a piping, a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table.

11. (Currently Amended) A film deposition apparatus according to claim 10, wherein an inside of one of said transferring chambers is kept under a reduced pressure and said liquid phase film deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

12. (Currently Amended) A film deposition apparatus according to claim 10, wherein one of said transferring chambers is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

13. (Previously Amended) A film deposition apparatus comprising:
a stock chamber for loading or unloading a substrate;
a transferring chamber for transferring said substrate; and
an EL material deposition chamber connected to said transferring chamber through a gate,
wherein said EL material deposition chamber is provided with a cell which contains an element belonging to Group 1 or 2 of the periodic table.

14. (Not Amended) A film deposition apparatus according to claim 13, wherein an inside of said transferring chamber is kept under a reduced pressure and said EL material deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

15. (Not Amended) A film deposition apparatus according to claim 13, wherein said transferring chamber is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

16. (Not Amended) A film deposition apparatus comprising:
a stock chamber for loading or unloading a substrate;
two transferring chambers each connected to said stock chamber through a gate;

a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate; and

an EL material deposition chamber connected to another said transferring chamber through a gate,

wherein said EL material deposition chamber is provided with a cell which contains an element belonging to Group 1 or 2 of the periodic table.

17. (Currently Amended) A film deposition apparatus according to claim 16, wherein an inside of one of said transferring chambers is kept under a reduced pressure and said EL material deposition chamber is filled with an inert gas and is kept under atmospheric pressure or in a pressurized state.

18. (Currently Amended) A film deposition apparatus according to claim 16, wherein one of said transferring chambers is connected to a calcining chamber through a gate, and said calcining chamber is provided with a mechanism for turning said substrate upside down.

Claims 19-30 have been previously cancelled.

Please add the following claims:

31 (New) A film deposition apparatus according to claim 1,
wherein said liquid phase film deposition chamber is a chamber for depositing an EL material.

32 (New) A film deposition apparatus according to claim 1,
wherein said liquid phase film deposition chamber is provided with a spin coater for forming an EL layer.

33 (New) A film deposition apparatus according to claim 1,
wherein said liquid phase film deposition chamber is provided with a nozzle for forming an EL layer.

34 (New) A film deposition apparatus according to claim 4,
wherein said liquid phase film deposition chamber is a chamber for depositing an EL material.

35 (New) A film deposition apparatus according to claim 4,
wherein said liquid phase film deposition chamber is provided with a spin coater for forming an EL layer.

36 (New) A film deposition apparatus according to claim 4,
wherein said liquid phase film deposition chamber is provided with a nozzle for forming an EL layer.

37 (New) A film deposition apparatus according to claim 7,
wherein said liquid phase film deposition chamber is a chamber for depositing an EL material.

38 (New) A film deposition apparatus according to claim 7,

wherein said liquid phase film deposition chamber is provided with a spin coater for forming an EL layer.

39 (New) A film deposition apparatus according to claim 7,
wherein said liquid phase film deposition chamber is provided with a nozzle for forming an EL layer.

40 (New) A film deposition apparatus according to claim 10,
wherein said liquid phase film deposition chamber is a chamber for depositing an EL material.

41 (New) A film deposition apparatus according to claim 10,
wherein said liquid phase film deposition chamber is provided with a spin coater for forming an EL layer.

42 (New) A film deposition apparatus according to claim 10,
wherein said liquid phase film deposition chamber is provided with a nozzle for forming an EL layer.

43 (New) A film deposition apparatus according to claim 13,
wherein said EL material deposition chamber is provided with a spin coater for forming an EL layer.

44 (New) A film deposition apparatus according to claim 13,

wherein said EL material deposition chamber is provided with a nozzle for forming an EL layer.

45 (New) A film deposition apparatus according to claim 16,
wherein said EL material deposition chamber is provided with a spin coater for forming an EL layer.

46 (New) A film deposition apparatus according to claim 16,
wherein said EL material deposition chamber is provided with a nozzle for forming an EL layer.

47 (New) A film deposition apparatus according to claim 1,
wherein said mechanism is provided with a lid.

48 (New) A film deposition apparatus according to claim 4,
wherein said mechanism is provided with a lid.

49 (New) A film deposition apparatus according to claim 7,
wherein said mechanism is provided with a lid.

50 (New) A film deposition apparatus according to claim 10,
wherein said mechanism is provided with a lid.

51 (New) A film deposition apparatus according to claim 13,
wherein said cell is provided with a lid.

52 (New) A film deposition apparatus according to claim 16,
wherein said cell is provided with a lid.